

CLAIMS

1. A liquid container closure comprising
a cap including a top wall having a perimeter edge, a grip support
5 extending around the top wall, and an annular skirt depending from the grip support
and cooperating with the top wall and the grip support to define an interior region of
the cap, the grip support and the perimeter edge of the top wall cooperating to form an
annular channel, the grip support being formed to include extrusion holes providing
passageways communicating with the annular channel and the interior region of the
10 cap, and
a monolithic compliant member including a cap liner located in the
interior region of the cap to contact the top wall, a grip ring located in the annular
channel to lie outside of the interior region of the cap, and extrusion posts coupled at
one end to the cap liner and at another end to the grip ring and arranged to extend
15 through the extrusion holes formed in the grip support to tether the cap liner to the
grip ring and retain the monolithic compliant member on the cap.
2. The closure of claim 1, wherein the annular skirt includes an
annular upper edge, the grip support includes an annular lateral wall extending away
from the perimeter edge of the top wall and mating with the annular upper edge of the
20 annular skirt, and wherein the perimeter edge of the top wall and an exterior surface
of the annular lateral wall cooperate to define a boundary of the annular channel
formed in the cap and engage the grip ring located in the annular channel.
3. The closure of claim 2, wherein the annular lateral wall is
formed to include the extrusion holes.
- 25 4. The closure of claim 3, wherein the extrusion holes are formed
to lie in circumferentially spaced-apart relation to one another in a circular pattern
around the perimeter edge of the top wall.
5. The closure of claim 3, wherein the extrusion posts are
arranged to extend vertically to lie in spaced-apart parallel relation to one another.
- 30 6. The closure of claim 3, wherein the annular skirt is arranged to
extend in a vertical direction and the annular lateral wall is arranged to extend in a
horizontal direction to lie in orthogonal relation to the annular skirt.

7. The closure of claim 2, wherein the annular lateral wall terminates at an outer edge, the grip support also includes an annular upright wall extending from the outer edge of the annular lateral wall downwardly to mate with the annular upper edge of the annular skirt, the annular upper edge of the annular skirt, 5 the perimeter edge of the top wall, exterior surfaces of the annular lateral and upright walls, and the annular upper edge of the annular skirt cooperate to define a boundary of the annular channel and wherein each of the annular skirt and annular upright wall is arranged to extend in a vertical direction, each of the top wall and the annular lateral wall is arranged to extend in a horizontal direction to lie in orthogonal relation 10 to the annular upright wall, and one of the annular upright and lateral walls is formed to include the extrusion holes.

8. The closure of claim 2, wherein the annular lateral wall terminates at an outer edge, the grip support also includes an annular upright wall extending from the outer edge of the annular lateral wall downwardly to mate with the 15 annular upper edge of the annular skirt, the annular upper edge of the annular skirt, the perimeter edge of the top wall, exterior surfaces of the annular lateral and upright walls, and the annular upper edge of the annular skirt cooperate to define a boundary of the annular channel and wherein the annular upright wall is formed to include the extrusion holes.

20 9. The closure of claim 8, wherein the extrusion holes are formed to extend in radially outwardly extending directions from a central vertical axis extending through the top wall.

10. The closure of claim 8, wherein the extrusion posts extend horizontally in circumferentially spaced-apart relation from one another.

25 11. The closure of claim 1, wherein the grip support includes a lateral wall arranged to extend away from the perimeter edge of the top wall and formed to include the extrusion holes.

12. The closure of claim 11, wherein the extrusion posts are arranged to extend vertically to lie in spaced-apart parallel relation to one another.

30 13. The closure of claim 1, wherein the grip support includes an upright wall arranged to extend upwardly away from the annular skirt and formed to include the extrusion holes.

14. The closure of claim 14, wherein the extrusion posts extend along radially outwardly extending lines intersecting a central vertical axis extending through the top wall and extend horizontally in circumferentially spaced-apart parallel relation to one another.

5 15. The closure of claim 1, wherein the cap liner includes a mount coupled to an underside of the top wall and at least one seal ring extending from the mount in a downward direction away from the top wall and the extrusion posts extend from the mount in an opposite upward direction toward the top wall.

10 16. The closure of claim 15, wherein the extrusion posts are arranged to extend vertically to lie in spaced-apart parallel relation to one another.

17. The closure of claim 15, wherein the grip support includes a lateral wall arranged to extend away from the perimeter edge of the top wall and formed to include the extrusion holes, and the lateral wall includes a downwardly facing surface engaging a peripheral portion of the mount.

15 18. The closure of claim 17, wherein the mount includes a radially outwardly facing surface and the grip support further includes an upright wall arranged to extend downwardly from the lateral wall and to engage the radially outwardly facing surface of the mount.

19. A liquid container closure comprising
20 a cap including an interior surface defining an interior region and an exterior surface lying outside of the interior region and
a monolithic compliant member including a cap liner located in the interior region of the cap and arranged to engage the interior surface of the cap, a grip ring located outside of the interior region of the cap and arranged to engage the
25 exterior surface of the cap, and means extending through at least one opening formed in the cap for tethering the grip ring to the cap liner to retain the monolithic compliant member on the cap.

20. The closure of claim 19, wherein the cap is made of a first material and the monolithic compliant member is made of a different second material.

30 21. The closure of claim 20, wherein the first material is one of polypropylene and polyethylene and the second material an elastomeric material having a lower shore A durometer hardness than the first material.

22. A liquid container closure comprising
a cap formed to include an interior region adapted to receive a neck of
a beverage container therein and

5 a monolithic compliant member including a cap liner located in the
interior region of the cap and adapted to mate with the neck of a beverage container
received in the interior region to establish a seal between the cap and the neck, the
monolithic compliant member further including a grip ring located outside of the
interior region of the cap and at least one post extending through a hole formed in the
cap to retain the cap liner and the grip ring on the cap.

10 23. The closure of claim 22, wherein the cap is made of a first
material and the monolithic compliant member is made of a different second material.

24. The closure of claim 23, wherein the first material is one of
polypropylene and polyethylene and the second material an elastomeric material
having a lower shore A durometer hardness than the first material.